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U.S. Agricultural Exports:
Eyes on the Third World

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|----------------------------------|--------------------|
| Associate Economics Editor | Herb Moses |
| Managing Editor | Patricia F. Singer |
| Design Coordinator | Carolyn Riley |
| Design Assistant | Mike Hunter |
| Composition | Joyce Bailey |

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Introduction

Boosting exports is one of the primary aims of U.S. farm policy. Many of the developed countries that once bought U.S. agricultural products are now self-sufficient or export competitors. This means the United States must increasingly turn to the the third world for agricultural sales.

The economies of many third world countries are beginning to grow again. Increasing population and rising per capita incomes are resulting in a need for greater food supplies,

despite rapid growth in agricultural production. However, lack of foreign exchange, coupled with large debts, limit their ability to buy the agricultural products they need to improve their diets. Policies by the United States to promote economic growth in these countries, and increase their ability to import agricultural products could also aid U.S. farmers.

The articles gathered here are reprinted from *Agricultural Outlook*. They look at the needs and problems faced by developing nations and their trading partners and outline policy options for addressing them.

The first article traces the ways to promote economic growth in third world countries and thus increase their ability to purchase U.S. products. It stresses the importance of aid and development assistance in making good trading partners.

Debt problems are analyzed in the second article. It looks at how the third world debt crisis occurred and what the consequences have been.

The remaining three articles deal more specifically with commodity issues—what commodities could the United States sell more of, and to which countries? Additionally, information is given on which countries have inadequate diets and need more food grains. Growth in wheat exports to the neediest countries are an important part of the future of U.S. agricultural exports.

Coupled with import needs are the prospects for cereal production in the third world. Despite improvements, consumption continues to outpace production in developing nations. As third world incomes improve, sales will likely increase. Those countries most able to expand purchases will be a few, mostly middle-income countries in intermediate stages of economic development.

Together, these articles present a picture of current third world food production, needs, and export capabilities. They also emphasize the great influence U.S. policies and economic conditions have on these countries. [Herb Moses (202) 786-3313]

Policies for Boosting Grain Exports to the Third World

The United States, remembering the export boom of the 1970's and worried about the lean fare of the 1980's, is intently watching for signs of growth in world agricultural trade. U.S. exporters are particularly eyeing developing countries. The developing countries' agricultural imports grew rapidly during the 1970's, but slowed during the early 1980's as their rates of economic growth dropped with the global recession, inflation, and their debt crises.

U.S. policies exacerbated the slump in export sales to the third world by reducing the U.S. share of the shrinking global trade total. U.S. support prices were high, pricing commodities out of the world market. In addition, a high-valued dollar made U.S. goods even more expensive to other countries.

Banking Crisis or Economic Development Problem?

Initially, the third world debt crisis of the early 1980's was viewed as a banking crisis. For nine large U.S. banks, loans to Latin America equaled 176 percent of their combined capital. Because loan losses could have made these banks insolvent, widespread default was a serious threat to the U.S. banking system. (These banks now have sufficient reserves set aside to withstand pressures from default.)

Besides being a danger to the countries themselves and to the banks that supported them, the crisis threatened other U.S. interests, including agriculture. Third world markets for U.S. exporters, including farmers, would have contracted immediately if the developing countries had defaulted on their debts. In the longer run, new development capital would have dried up following default, limiting income growth. Income growth has been essential in creating new export markets for farm products.

The international financial community, the debtor countries, and the U.S. Government have debated how to resolve the debt crisis. Efforts have included:

- activities to reduce annual debt-service payments,
- steps by debtor countries to improve export earnings and reduce import expenditures, and
- actions to provide the additional capital needed for the debtor countries to resume rapid economic growth.

Reducing annual debt service payments.—Third world countries' annual debt-service requirements can be reduced in several ways. One is to stretch out the repayment schedule. A second is to forgive part of the debt when it is clear that the country cannot repay the whole loan. The banks can take the loss, or Congress could vote a bailout for the banks. The latter is probably unlikely, though, given the large budget deficits of the U.S. Government.

Banks may have reservations about forgiving debt because of political repercussions. If some countries are forgiven their debt, then other countries, including those able to meet their obligations, may also demand to have their debt forgiven.

Expansion of the market for debt-equity swaps can help reduce external debt in developing countries. These swaps begin with an investor purchasing the loan at a discount from the lender. The discounted loan is then exchanged at the central bank of the debtor country for local currency. The currency is next used to purchase assets in the debtor country.

The net effect of the swap is that the country's external debt is reduced, and the bank which sold the debt has removed the shaky loan from its account. If the bank wishes to have direct investments in the debtor country, it can make the equity investment itself. Finally, debtor countries might buy their own debt if the discount became large enough, thus repaying their loans cheaply.

A lower valued dollar helps reduce the burden of debt. Another way of reducing debt-service payments is to lower U.S. interest rates, since the interest due on many third world loans is linked to U.S. rates. Interest payments in 1985 absorbed 36 percent of export earnings in Latin America, where much of the third world debt is concentrated. U.S. interest rates could be reduced by U.S. Government actions to increase the money supply; however, this would affect many parts of the economy and could even accelerate inflation. Another possibility is that lender banks could directly cut rates charged to third world borrowers.

Improving the trade balance of debtor countries.—The heavily indebted developing countries are often required by the International Monetary Fund (IMF) to reduce imports and increase exports to generate the foreign exchange needed for debt-service payments. These actions can reduce U.S. exports and even increase the supplies of competing grain on the international markets if the third world country is a grain exporter.

Countries wishing to reduce imports to save foreign exchange have two options. The first is to raise the domestic price of imports by devaluing their domestic currency, thus helping to induce people to switch from foreign to domestic products. The second is to limit imports by using tariffs, quotas, and other restrictions.

Export expansion for the debtor countries can occur only if other nations absorb the debtors' exports. If U.S. lenders are to be repaid and more U.S. exports purchased, then the United States must buy the debtor countries' exports.

U.S. economic growth was the world's "engine of growth" in the 1980's. U.S. imports expanded rapidly with higher domestic consumption, while U.S. exports remained low because of stagnant overseas demand. Lower economic growth rates in Western Europe and Japan caused developing-country manufacturers to shift their exports to the United States. The United States now consumes 60 percent of the third world's exports of manufactured goods, compared with 40 percent in 1980. These competing imports give rise to calls for increased protectionism from nonagricultural interests.

Besides tropical products not grown in the United States (such as coffee and tea), third world exports to the U.S. include some agricultural products that are grown here, such as fruits and vegetables. These competing imports underlie a potential conflict between overseas farmers growing crops for export, such as grains and oilseeds, and U.S. producers whose crops compete with imports.

U.S. growers of grains and oilseeds likely would see their volume of sales rise under free trade. U.S. consumers would benefit from lower prices for agricultural commodities not grown here, such as tea, coffee, and spices. However, U.S. growers of agricultural products competing with imports, such as sugar, fruits, vegetables, meats, and dairy products, can argue that their interests are better served by trade limits.

Capital for economic development.—Developing countries need outside capital if they are to make economic progress. They generally have an abundance of cheap labor and natural resources, but lack the capital with which to take advantage of their economic resources.

As their economies grow, developing countries expect to expand their trade and acquire the foreign currency needed to service their debts and purchase investment goods. However, with the falling prices of the 1981-82 recession and the rising interest rates, many developing countries could not both service their debt and continue domestic investment.

This shortage of foreign currency was exacerbated in the early 1980's as third world nations prepared to devalue their currency. Developing-country residents with money to invest began exporting capital to Western Europe and the United States to avoid the devaluation. This export of capital as economic conditions worsen is referred to as capital flight. It requires the exchange of domestic currency for the currency of the country where the foreigner will send his capital. For the United States, this means the foreign country will have fewer U.S. dollars for purchasing U.S. agricultural and manufactured products.

Mexico, Argentina, and Venezuela exported significant capital in the early 1980's. For example, in 1981-82, capital export by Venezuela was two-and-one-half times the increase in its foreign external debt. Capital flight from developing countries has slowed recently with the stabilization of economic conditions.

Nevertheless, investment in many developing countries has fallen to pre-1970's levels, and economic growth has declined. Financing is needed for capital investments and for imports of equipment and materials. At issue is how to provide more money so that growth can resume.

In addition to seeking more foreign aid, debtor countries secure additional capital by changing their laws to allow more direct foreign investment. Following World War II, the capital flow to the developing countries was largely direct equity investments by multinational companies, and capital transfers by governments and international agencies. During the third world borrowing boom of the 1970's, lent capital made direct equity investment less important. Now, the third world seeks to embrace policies to invite more foreign investment.

Equity investment and official transfers are important because commercial lenders are wary; heavily indebted countries are considered poor credit risks. Developing countries are paying more on old loans than they are getting in new loans. This trend is most striking in Latin America, where debtor countries have paid out \$100 billion since 1982, about as much as they received in net lending from 1974 to 1981.

U.S. Assistance Can Promote Development

The United States has long assisted developing countries, both to achieve U.S. foreign policy objectives and to help these countries become our commercial trading partners. Two programs to achieve these objectives are food aid under P.L. 480 and general development aid through the U.S. Agency for International Development (USAID) and various international agencies such as the World Bank.

U.S. farm groups watch the programs of USAID, the World Bank, and other international agencies, because some assistance goes for agricultural development in recipient countries. Some U.S. groups fear that boosting the third world's food productivity could mean fewer purchases from the United States, or increased competition in the international marketplace.

However, development assistance to agriculture is crucial. In developing countries, the agricultural sector is frequently the most important one for the initial stage of development. Because agriculture is the largest sector in most developing countries, it must grow if the national economies are to prosper.

Some countries have encouraged investment in light industry, such as textiles and shoes, ahead of agriculture. But developing countries' attempts to industrialize their economies have not succeeded while they have ignored the low productivity of their subsistence agricultural sectors. The record is much better when countries have focused on improving the productivity of all their resources, including agricultural land and labor. Examples include Japan and South Korea.

Increased agricultural productivity raises a developing country's farm income and supplies food and raw materials for processing. Nonfarm income then rises as the higher farm income creates demand for local goods and services. Agriculture can prime the pump of the whole economy. As farming becomes more efficient, fewer workers are required, freeing them for nonfarm jobs. At this stage, alternative sources of employment are critical.

Competition with U.S. farm products may well occur with improved third world agricultural productivity. But as an economy becomes more advanced and specialized, a developing region or country must import those products not grown locally. The income from the export of locally grown crops helps make this possible. Thus, the country becomes a potential U.S. customer for other products.

Brazil is a good example. It has become a very strong competitor in the international soybean market and a low-cost orange juice exporter to the United States. However, Brazil has been one of the largest wheat importers in the developing world and has shifted from an exporter of corn to an importer for the last decade. Brazil's development resulted in greater competition for U.S. soybean and orange producers, but larger markets for U.S. grains.

U.S. Lowers Its Export Prices

Domestic farm policies of the early 1980's kept U.S. export prices from adjusting to the rising dollar and the reduced demand and falling commodity prices of the 1981-82 world recession. This made the United States a "residual supplier" for grains and resulted in a loss of competitiveness and market share.

Declining U.S. export volumes and rising Government stocks during the 1982-85 crop years led to provisions in the Food Security Act of 1985 for loan rate reductions. In addition, there were mandatory marketing loans for upland cotton and rice; discretionary marketing loans for wheat, coarse grains, and soybeans; generic certificates; and expanded export promotion programs.

With implementation of the 1985 act, the U.S. is meeting world prices and having an impact on governments and farmers throughout the developing world. Some third world exporters have attempted to increase the volume of their exports to offset the decline in prices. For developing countries importing these crops, these lower prices have resulted in a savings of foreign exchange.

At the farm level, lower prices are contributing to financial stress in some countries. Lower prices reduce incentives for farmers and for governments in some developing countries to invest in agricultural production.

Lower market prices imply higher costs for the governments of exporting countries that use export subsidies in combination with support prices, including the United States. For the EC, this financial burden is further increased when the U.S. dollar falls relative to their currencies, since this lowers U.S. export prices.

International Financial Markets Can Affect Farm Trade

Changes in U.S. policies affecting financial markets and inflation can significantly affect agricultural trade. The U.S. Government reduced inflation by restricting the growth of the money supply from late 1979 through the early 1980's, simultaneously running record budget deficits. Consequently, U.S. interest rates rose. Private investment and the large federal budget deficit exceeded private savings.

High interest rates induced foreign investors to make up this shortfall of domestic savings by purchasing U.S. assets. These assets included stocks, bonds, and other financial and physical properties. If these investors had not brought their funds to the United States, U.S. interest rates would have gone much higher in order to cut private investment to match savings, or the federal deficit would have had to be greatly reduced.

The foreign investors made these purchases by first exchanging their own currencies for U.S. dollars. This boosted the demand for dollars and increased the supply of foreign currencies in the foreign exchange markets. With the demand for dollars and the supply of foreign currencies rising, the value (i.e., the exchange rate) of the U.S. dollar rose, and that of foreign currencies declined.

Thus, the public decisions and private financial transactions that allowed the federal deficit and private investment to exceed private savings led to a higher valued dollar. This made it easier for foreign producers, including developing-country farmers, to be the low-cost suppliers for U.S. consumers. This higher valued dollar also made it easier for U.S. competitors to be the low-cost suppliers of products, including grains and oilseeds, to developing countries.

U.S. Farmers Can Share In World Trade Growth

Growth of third world grain imports slowed when developing countries' income growth slowed and they faced problems with international debt. Developing countries seek to resume their rapid economic growth.

The United States and other developed countries can promote economic growth in the third world by reducing trade restrictions and debt burdens and increasing capital flows. The recent adjustment in U.S. agriculture, while very painful, has reduced production costs, lowered prices, and placed the United States in a position to capture a large share of prospective growth of grain imports by the developing countries. [Gary Vocke (202) 786-1706]

Debt Still Overhangs Third World Economies

World debt has brought a crisis to international trade and economic development. Despite several years of debt re-scheduling, the heavily indebted nations show no evidence of sustainable renewed economic growth. Of the 79 less developed countries (LDC's), seven had debt in 1982 that topped U.S.\$10 billion and have rescheduled over 50 percent of the debt in the last 4-1/2 years: Morocco, Nigeria, the Philippines, Argentina, Brazil, Chile, and Mexico. The fact that these most heavily indebted nations have also been among the fastest growing markets for U.S. agricultural exports makes the crisis especially serious for U.S. farmers.

Third world countries are increasing their production of food, but with rising populations and growing per capita consumption, food use is climbing faster than production. This would make prospects bright for exports of U.S. farm products if sustainable economic growth were helping these countries to meet debt payments. In spite of the improvement in the world economy from the recession of 1981-83, though, the problems related to overborrowing are likely to plague the world economy into the early 1990's.

Rapid Growth, Easy Money Set Scene for Debt Problems

The current world debt problem had its roots in the rapid economic growth of the 1960's and early 1970's, when credit was readily available and inexpensive. Demands for natural resources, especially petroleum, expanded. The fourfold oil price hike by OPEC in 1973-74 shocked the world economy. Also, the balance of trade changed so that oil-rich countries had huge cash inflows.

The developed countries employed easy money policies both before and after the first oil shock. These monetary policies, combined with the increase in trade flows and trade liberalization, resulted in rapid growth in the world money supply.

International bankers directed some of the increased liquidity to a program of massive lending to middle-income LDC's. The bankers anticipated high returns, assuming that a country's guarantee was adequate provision against default. The bankers did not ask whether the funds were to be invested in long-range development projects or used for immediate consumption of previously unaffordable imports.

The 1973-74 oil price rise set the stage for the large debt accumulation; the second oil shock, in 1979-80, pushed the world into the recession of 1981-83. The inflationary effects of the first oil shock were fanned by easy money. When the second shock came, the reaction of most countries in the Organization for Economic Cooperation and Development (OECD) was to turn to tighter monetary policies. The second oil price increase was more disruptive than the first because many LDC's were by then heavily in debt and had to cope with the tighter monetary policies of the industrial nations.

The developed countries' tight money policies brought sharply slower economic growth among OECD nations and substantially higher real interest rates. The higher interest rates made debt an even heavier burden to the most heavily indebted LDC's. Further, the lower rate of income growth and the higher real interest rates in the industrial world reduced the demand for traded goods. This contributed to slower economic growth in developing countries.

Interest Rate Increase Raised Debt Burden

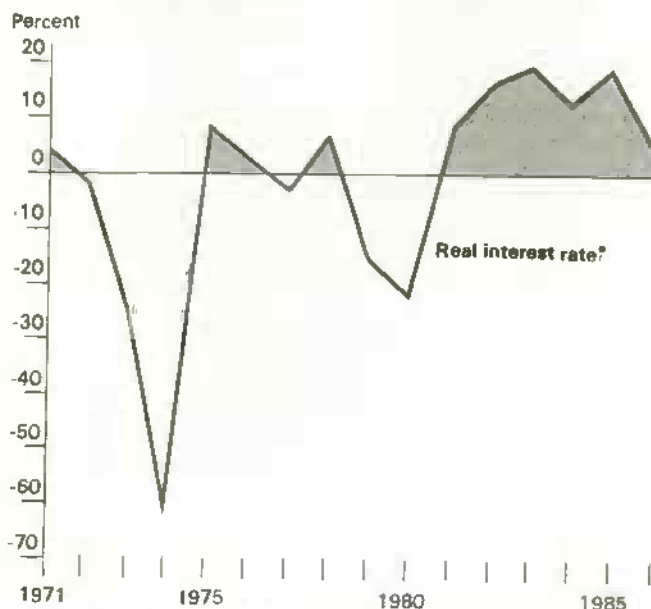
Because they became extremely changeable, market interest rates grew in importance in the debtor nations' repayments. During the late 1970's, loans were extended at variable interest rates, with premiums at fixed points above the U.S. prime rate or the London Interbank Offered Rate (LIBOR).

Real interest rates provide a measure of the opportunity cost of borrowing. The U.S. real interest rate is typically calculated by subtracting current inflation from the nominal interest rate. For a debtor country, though, the appropriate measure of the real rate is the nominal interest rate less the change in export prices. If a country's export prices rise faster than interest rates, the real interest rate is negative; exporters there are better off holding export commodities than money.

The 1970's were dominated by price increases that far exceeded nominal interest rates. Thus, borrowing was encouraged. The situation reversed itself in the 1980's. Nominal long- and short-term interest rates on dollar loans rose sharply beginning in 1978, as the demand for money increased and monetary policies tightened. Not until 1981, however, did inflation rates slow below interest rates, sharply increasing the real interest rate.

The interest rate reversal—from negative to positive—put the debtor nations in a bind. In the 1970's, low-interest loans could be paid later with inflated dollars. But loans

For Developing Countries, Real Interest Rate Has Been Positive for Most of 1980's



*Equals the nominal rate minus the rate of change in export prices.

made in the late 1970's and the 1980's at variable rates were no longer eased by inflation, and the real cost of repayments began to soar.

Despite the decline in short-term rates in 1983-85, real interest rates facing all developing countries remained above 10 percent those years, standing higher in 1985 than in 1984. However, in 1986 and early 1987, real interest rates declined below 4 percent.

Inflation accelerated tremendously in the developing world after 1981. High inflation was notable not only in the seven most indebted LDC's, but also through most of Latin America. Rapid inflation destabilizes countries that have a limited ability to borrow. Some of its more ravaging effects are the elimination of private savings, curtailment of long-term contracts, capital flight, and a collapse of domestic investment in new productive capacity. In countries with extremely high inflation rates, gross capital formation as a share of GDP plummets. The most heavily indebted LDC's all suffered from these effects.

Prices for LDC's Commodities Fell

Prices received and paid by developing countries also changed. During the 1970's, general raw material shortages contributed to price increases for the LDC's exports, many of which are raw materials. In the 1980's, by contrast, prices fell as stocks of primary raw commodities accumulated. The third world, much of which is dependent on a few commodities to earn precious foreign exchange, was selling less volume at lower prices. Price changes reflected the sharp differences between the exchange rates, interest rates, and monetary environment of the 1980's and the 1970's.

Between 1973 and 1980, export prices more than doubled. But after 1981, these prices fell 20 percent. Prices for many individual commodities have fallen by far greater percentages.¹ Not since the 1930's have developing countries faced such a depressed world commodity environment.

End of Easy Credit Forced LDC's To Reduce Imports

The current account balance measures the balance of payments among countries—which countries owe which, and how much. It is closely related to the flow of credit. The availability of credit during the 1970's supported deeper current account deficits in LDC's than before. However, when lending nations began to curtail credit around 1981, the developing countries contracted their imports and tried to expand exports. The current account deficit for all developing countries reached \$153 billion in 1981, declining since then to \$60 billion. Deficits dropped the most in the most heavily indebted countries.

¹ The all primary commodity index (as calculated by the International Monetary Fund) has declined 25 percent since 1980. Raw food commodities (grains and fruits) have fallen 25 percent. The all metals index has dropped 30 percent, with copper down 35 percent and tin down 28. For Brazil, the dollar export price of sugar is down more than 60 percent. Only in early 1987 have these trends reversed.

How Economic Changes in Developed Countries Are Transmitted to LDC's

Although the major developed countries moved to a flexible exchange rate system in 1973, the developing countries for the most part have maintained fixed rates aligned with major currencies. The developing countries respond to changes in world monetary conditions and the growth of bank liabilities in the rest of the world.

An increase in money in the developed countries will, by depressing developed-nation interest rates, lead to capital inflows into LDC's, where returns remain higher. The developing countries' foreign exchange reserves will increase, and their money stock will rise as foreign currency is traded for their domestic currency. If this happens, it drives interest rates lower in the developing countries and can depreciate their currency.

However, many developing countries have chosen not to allow internal money supplies to be determined by external forces. "Sterilization" is a process by which a nation's central monetary authority (in the United States, the Federal Reserve) takes action to counter external influences on the domestic money supply, in order to maintain a fixed exchange rate. In this case, with pressure toward depreciation, sterilization tightens money and creates excess reserves, stabilizes prices, and returns interest rates to previous levels. Following such sterilization by an LDC, domestic real interest rates would then continue higher than rates in developed countries.

Debt accumulation under these circumstances is rational: the LDC can borrow from developed countries at low rates, and repay with earnings that grow faster than the developed nations' interest rate. The rapid increase in world money during the 1970's resulted, not surprisingly, in rapid debt accumulation. The situation changed drastically, however, when the easy-money policies of the 1970's were abruptly transformed into the tighter international financial environment of the 1980's.

Oversterilization of reserve outflows resulted in more inflation. Real exchange rates depreciated against developed countries. Lower domestic returns supported yet higher real repayment schedules. Loans assumed at variable rates necessarily proved especially difficult for the LDC's to service as interest rates rose. LDC's with heavy debts were squeezed by less ability to import and by slower internal economic growth. The transmission mechanism described here shows that monetary policy changes in developed countries affect everyone.

Although the Asian regions made significant gains, the world export pace slowed in the 1980's. U.S. agricultural exports stagnated. Since 1981, the LDCs' total imports have declined by nearly \$100 billion. The seven most heavily indebted LDCs' total exports have dropped 25 percent. Latin American total imports have also dropped 25 percent. In 1982, the Latin American countries were the largest importers of U.S. farm products, and the United States was also the chief market for their farm exports.

When the LDC's cut back on imports, they often curtailed nonagricultural purchases first. Agricultural imports increased as a share of all imports by developing countries after 1982. From 13 percent in 1982, the LDCs' farm imports rose to 15 percent of the total in 1984. It appears that the LDC's have been trying to maintain agricultural imports at the expense of investment imports. This policy is expedient but detrimental to important long-term development plans.

The most dramatic case of agricultural imports' substituting for other imports has been in Latin America. Farm products rose to 15.5 percent of all Latin America's imports in 1984, up from 11.5 percent in 1982. The 1984 share was higher than at any time during the 1970's.

The U.S. share of the world agricultural export market through 1984 remained above the late 1970's, except in 1982. For example, of all farm product imports by Latin America, U.S. farm products in 1985 accounted for 50 percent, up from 35-45 percent in the late 1970's. The market share gains represented a bigger slice of a shrinking pie, however.

Reschedulings Increased Significantly in 1981-83

Through 1980, debt repayment problems did not pose a serious threat to either the world financial system or global trade. During 1956-75, only 11 countries were involved in debt negotiation and reschedulings and the total debt rescheduled was only about \$8 billion. Between 1976 and 1980, again a total of 11 countries renegotiated their debt, which came to \$13.5 billion. The pattern of international debt reschedulings since then, though, indicates a serious mismatch between LDCs' payment commitments and their actual ability to service their debts.

Between 1981 and 1983, an unprecedented 25 countries rescheduled \$55 billion of debt. The magnitude of the debt at risk became a concern to the international financial system. In 1984, 23 countries renegotiated almost \$34 billion. The number of countries rescheduling in 1985 and 1986 (22 and 24, respectively) and the amounts (\$93 and \$122 billion) indicate that debt repayment is still very much an international problem.

Net Outflows Began To Exceed Inflows in 1983

Between 1974 and 1982, net transfers² to developing countries totaled about \$200 billion; the largest single year was

1978 with \$57 billion. Data on the decline in debt growth show significant credit withdrawn from developing countries after 1982.

Starting in 1983 and continuing through 1986, net transfers to developing countries were negative—that is, debt-service payments were greater than incoming new credit. During 1983-86, there was a net outflow of about \$110 billion, with 1984 alone accounting for almost \$40 billion. Despite marginal improvements in 1985 and 1986, net outflows still averaged \$30 billion per year.

Debt-Service Ratio Fell

One common measure of the burden of international debt is the debt-service ratio; that is, total payments as a percentage of goods and service exports. For the 79 LDC's as a group, this measure rose from 12 percent in 1974 to a high of 29 percent in 1982. However, throughout that period of easy credit for the LDC's, new borrowings exceeded debt-service payments. During 1983-86, interest payments due swelled, and net debt-service payments (payments less borrowing) fell to less than the interest payments due. The debt-service ratio declined between 1982 and 1986, most notably between 1982 and 1983. Even so, \$1 out of every \$4 that the developing countries earned through exports during 1983-86 went for debt service.

Although the debt-service ratio indicates the current debt burden, this measure depends critically on payment terms, amount of new borrowings, and reschedulings. Rescheduling debt lowers the current debt-service ratio, but transfers the burden to the future.

Adjustment Led to Lower Income

The withdrawal of credit from developing countries in the early eighties required a substantial balance-of-payments adjustment, usually by the LDCs' reducing their imports.³ An indicator of the size of the adjustment can be computed as the export increase or import decrease required to meet higher interest payments on the debt. It is useful to express this change as a ratio to exports, or a net adjustment rate.⁴

In 1973 and 1974, the net adjustment rate for all developing countries was less than 3 percent. It rose to more than 20 percent in 1975, dropped to just over 15 percent during 1976-80, but rose to more than 35 percent in 1981. Between 1981 and 1984, it dropped to just over 10 percent. The pattern for the seven most heavily indebted countries showed more extreme fluctuations than the pattern for all developing countries.

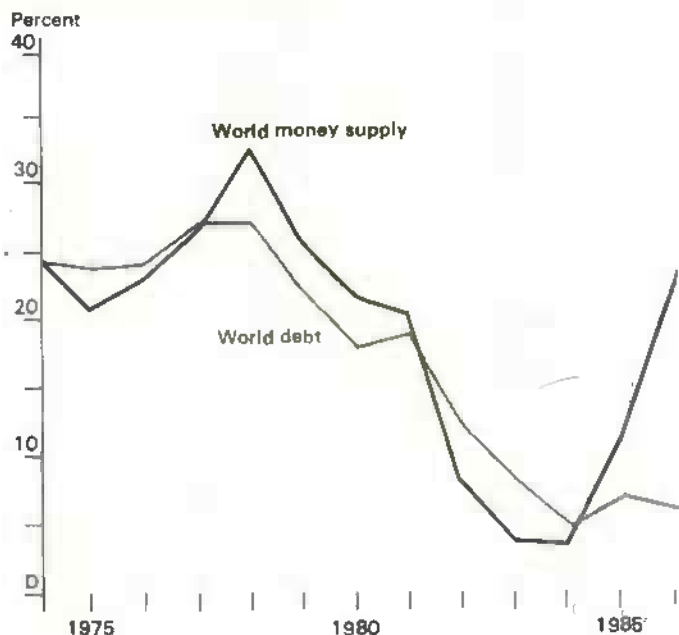
With loss of credit, lower export earnings, and rising real repayment rates, the developing countries were forced to adjust. Imports were cut, income growth slowed sharply, and capital formation was cut. The rate of real per capita

³ Overall short-term balance-of-payments equilibrium requires that if capital inflows (net transfers) into a nation fall, the country must cut its net imports.

⁴ The net adjustment rate (NA) is $NA = X - M - iD$, where X = exports of goods and nonfactor services, M = imports of goods and nonfactor services, i = the current interest rate on the level of total debt, D . The net adjustment rate is then NA/X . All magnitudes are nominal.

² Net transfers are defined as the change in total debt—reflecting repayments and additional loans—less interest payments.

Spurred by Trade Increase, World Money Supply Has Grown Faster Than Debt



income growth for the developing countries has declined since 1974. The seven most heavily indebted countries have experienced actual losses in real income per capita since 1981.

The Consequence: A Low-Level Growth Equilibrium

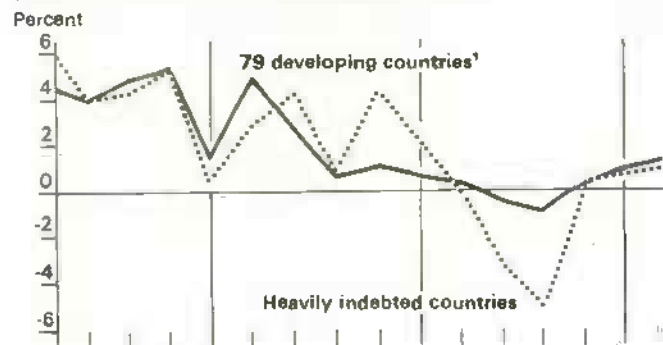
Renewed growth in the LDC's will depend in part on their ability to increase exports. For this, they must sell to the industrialized countries. Although income growth in the industrial nations is positive, the rate of increase is modest compared with the 1970's. Further, if substantial numbers of developing countries are reducing imports, and concurrently trying to boost exports, increasing total export sales around the world becomes extremely difficult. This has been the case since 1982.

Although many developing countries have been cutting their purchases and paying on their debts, no evidence of renewed economic growth has yet appeared. The adjustments to the debt crisis may well have forced developing countries (and, possibly, the world economy) into a low-level growth equilibrium. This will prevent the rapid debt-ratio reduction which would lead in turn to new credit availability and growth in the developing countries.

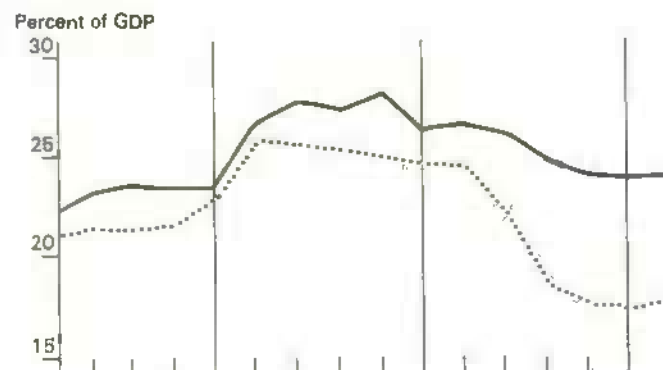
The LDC's have been a primary growth market for U.S. agricultural exports. However, the debt crisis has constrained world trade in general, agricultural trade as part of total trade, and U.S. agricultural exports.

The ideal world scenario for resolving the debt crisis would include a period in which debt-affected countries undertook

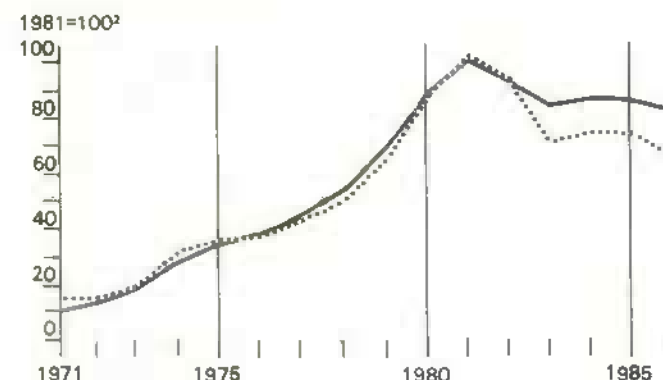
Compared With 79 Developing Countries, the Heavily Indebted Countries Have ... Slower Growth in Real Per Capita Income



Falling Capital Formation



Faster Declining Imports



¹Non-OPEC developing countries plus Venezuela and Indonesia.

²In 1981, imports of the 79 developing countries were U.S. \$511 billion and of the heavily indebted countries, U.S. \$180 billion.

Why the World Money Supply Shrank During 1981-84

Several factors dominated the slowdown in the growth of the world money supply during 1981-84:

- Deregulation of the U.S. banking sector and higher interest rates removed one of the chief incentives for overseas deposits by U.S. investors and U.S.-owned international banks;
- Reduced exports and increased debt payments reduced the money supply in debtor countries;
- World recession cut world trade and lessened the demand for money; and,
- U.S. domestic demand for money increased beginning around 1981-82. The rise in money demand centered around increased Government bond issues, followed by the 3-year growth market in stocks, and was accompanied by a proliferation of interest-bearing demand deposits.

Many sectors in the United States were demanding more money. The increased U.S. demand for money reduced the supply of dollars formerly available to the world trading community, since U.S. dollars are the chief component of overseas bank assets.

The world money supply has expanded again since 1985, mostly to provide liquidity to support increases in world trade.

Balance-of-Payments Deficit Hurts Investment, Economic Growth

An increasing balance-of-payments deficit often results in a cut in investment. The reason why the burden of adjustment tends to fall on investment can be seen from the following accounting framework. Let Y , national income, consist of C , consumption, plus I , investment, plus G , government expenditures, plus X , export earnings, less M , imports. Total expenditure is the sum of consumption; S , savings (households and business plus net foreign transfers); and T , taxes. Income equals expenditure, so it follows that:

$$C + I + G + X - M = C + S + T.$$

Cancelling consumption from each side and rearranging the terms yields:

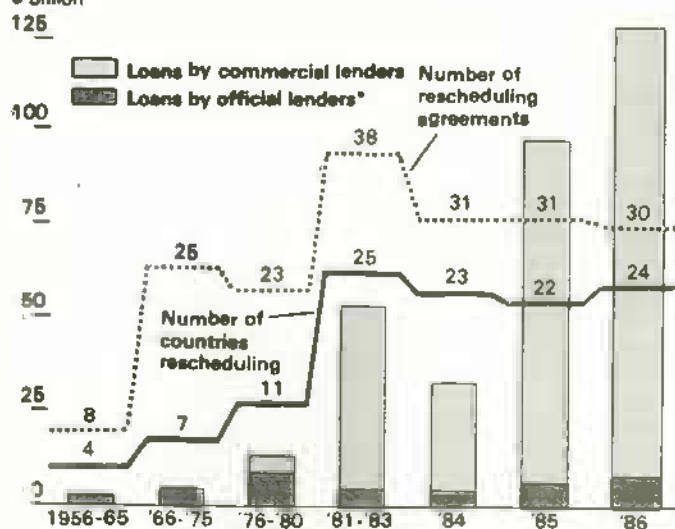
$$(G - T) + (X - M) = (S - I)$$

That is, the government deficit plus net exports equals the difference between savings and investment. If government spending, taxes, exports, and savings remain unchanged, then any decrease in imports (M) must be matched by a decrease in investment (I).

Many developing countries have little domestic savings and small tax bases. Government expenditures may well depend on export earnings. Some countries seek to maintain investments under these conditions by increasing savings. This can be done by reducing consumption. But for most LDC's, the main adjustment to an increased drain on the balance of payments is a cut in investment. This investment reduction implies slower future economic growth.

Commercial Debt Reschedulings Soared in 1985 and 1986

\$ billion



*Noncommercial publicly guaranteed lenders such as the World Bank.

policy changes to realign their export-import balance, followed by a period of renewed world growth led by expansion of trade.

The needed export-import adjustment has taken place, but there is scant evidence that it is being followed by renewed growth in incomes and trade. Contracted imports and rigorous promotion of exports in much of the world have made export markets more competitive and constrained.

Rescheduling the LDCs' debt has become commonplace, but it has only improved the term structure of the debt, not reduced the burden. The burden is equal to or greater than it was at the height of the debt crisis in 1982. For all of the adjustments and renegotiations, third world debt continues to limit world trade and development. (Matthew Shane and David Stallings (202) 786-1705)

The Outlook for Cereal Production in the Third World

Cereal grain production in third world countries over the last 20 years has been increasing faster than population, with more of the increase from rising yields than in the past. However, consumption per capita has been rising even more rapidly. Consumption will continue to climb if economic development continues, so production is falling behind consumption. Although imports in the short-term may be hampered by foreign exchange shortages, foreign debt, and current slow economic growth, the third world is already dependent on cereal imports and may become even more so in the future.

Crop Production Lags Behind Use

Over the past two decades, third world production of both food grains and coarse grains has increased more rapidly than population, especially food grains (notable exceptions include some countries in Sub-Saharan Africa, where population is increasing faster than production and consumption). Despite the output gains, rapidly growing populations combined with economic expansion have forced the developing countries to steadily increase their imports.

Thus, domestic production has been declining as a percentage of the sum of domestic production and net imports. Self-sufficiency is trending down more rapidly in coarse grains than in food grains.

The developing countries were net exporters of coarse grains during the 1960's and early 1970's. Since the mid-1970's, however, their coarse grain imports have increasingly overshadowed exports because of the strong demand created by growing domestic livestock production, especially poultry. Rising incomes and urbanization in the higher income developing countries led consumers to substitute livestock products and other more costly foods for such staples as coarse grains, roots, and tubers.

The Green Revolution of the 1960's, based on introduction of high-yielding varieties, has greatly increased wheat output in the traditional spring-wheat-growing countries. The gains have reduced and in some cases eliminated imports into these countries.

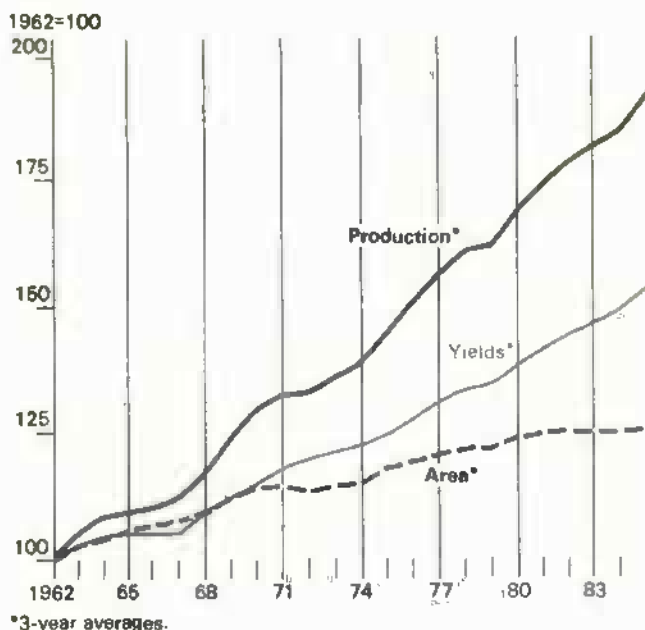
In tropical climates, though, the Green Revolution has not significantly expanded wheat output. Demand for wheat products continues to increase there and is met largely by imports. Thus, the developing countries' wheat imports have grown 100 percent since the early 1960's, even though their wheat output has risen more than 150 percent.

If these trends continue, the third world will remain a growing market for food grains and coarse grains. The driving force behind these trends is rising incomes.

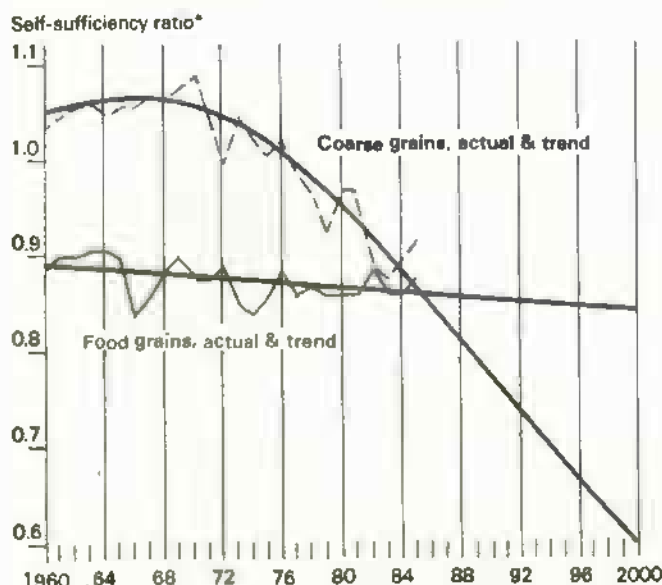
Improved Varieties, More Fertilizer, and Irrigation Are Boosting Output

Third-world crop yields are increasing with improved varieties, more irrigation, and additional fertilizer. Therefore, many developing countries are now less dependent on bringing new land into production in order to increase output. However, some countries, particularly those in Africa, are only now putting into place the agricultural research and extension capacity needed to make the transition to improved varieties that give large yield increases with irrigation and adequate fertilization.

Third World Grain Production Rising as Yields Improve



Third World Becoming Less Self-Sufficient in Grain as Incomes Grow



*Domestic production divided by the sum of domestic production plus imports.

During the 1960's, expanding area and rising yields made equal contributions to increasing cereal output in the developing world, but by the early 1970's yields were making a larger contribution. The expansion of area slowed in the early 1980's, while yields have continued to rise.

Improved varieties are key to raising yields in the developing countries. About 27 percent of the seed used in the third world is improved. In Latin America, 44 percent of seeds are of improved varieties, but the percentages drop to 32 and 23 in the Near East and the Far East, respectively. In Africa, only 9 percent are of improved varieties.

During the Green Revolution, significant research progress was made with wheat and rice, and the semidwarf varieties produced spread rapidly through the irrigated areas of the developing world. They greatly increased production in areas where they were suitable.

Irrigation has also been important to achieving higher yields, especially in the Far East, which has almost two-thirds of the irrigated area of the developing world. The Near East has 20 percent, Latin America has 13 percent, while all of Africa has only 3 percent.

Third World Country Groups by Major Crop & Climatic Zone

| Root crop zone Humid tropical Population 193 million | Rice zone Humid tropical & temperate Population 574 million | Coarse grain zone Rain fed tropical Population 439 million | Wheat zone Temperate/ Mediterranean Population 395 million | Mixed Warm temperate & arid to humid tropical Population 673 million |
|--|--|---|--|---|
| Ghana Sierra Leone Mali Togo Benin Uganda Rwanda Zaire Gabon Ivory Coast Nigeria Liberia Cameroon Senegal Papua New Guinea | Madagascar Colombia Dominican Republic Sri Lanka Philippines Nepal Indonesia Haiti Singapore Burma Panama Bangladesh Malaysia Thailand Hong Kong Taiwan Jamaica Trinidad Costa Rica South Korea | Kenya Niger Malawi Sudan Guyana Burkina Faso Ethiopia Mozambique Tanzania Chad Somalia Zambia El Salvador Honduras | Ecuador Nicaragua Paraguay Mauritania Zimbabwe Peru Guatemala Bolivia Yemen Arab Republic Mexico Venezuela Brazil South Africa Oman | Pakistan Iraq Jordan Iran Syria Chile Uruguay Saudi Arabia Kuwait Libya India |



Irrigation by itself gives higher yields. Further, when farmers combine irrigation with increased fertilizer use, the yield response is even larger. In addition, with irrigation, the risk of losing the money spent on fertilizer because of crop failure is lower. Perhaps 60 percent of all fertilizer used in developing countries is applied to irrigated crops.

Situation Different for Rain-Fed Agriculture

Rain-fed agriculture has not fared as well as irrigated. About 80 percent of the third world's cultivated land is rain-fed, supporting nearly two-thirds of its farmers. Much of this farming is under subsistence conditions with very low input use. Only 3 kilograms of fertilizer are applied per hectare in the low-rainfall areas, while the higher rainfall areas average 20 kilograms per hectare. In contrast, about 110 kilograms per hectare are used in areas with reliable irrigation. Half of the increase in grain yields since 1950 can be attributed to greater fertilizer use.

The principal coarse grain crops grown in rain-fed areas in the third world are corn, sorghum, millet, and barley. Research on these crops started later than that on the food grains, and not enough time and effort have been invested yet to produce similar high-yielding results. However, even as suitable high-yielding varieties of these coarse grains are developed, there will still be problems with low soil fertility and, in the semi-arid regions, lack of adequate water.

Imports To Continue Up

In the third world areas still not planted to semidwarf, high-yielding wheat and rice, there is little reason to expect the varieties to spread any more rapidly than in the past. In fact, because the varieties will be spreading to nonirrigated or newly irrigated lands, yield gains may be less than in the irrigated areas where these varieties were first adopted in the late 1960's and the 1970's.

Construction of irrigation facilities is also unlikely to accelerate because many countries have only limited investment resources. Nevertheless, new irrigation facilities should continue to be developed slowly in the third world, because food imports are also costly and require recurring foreign exchange costs.

There have been no dramatic developments with corn yields comparable to the breakthroughs in wheat and rice. There are improved varieties of sorghums and millets, but their use has not spread beyond India, Mexico, and Argentina. Varieties suited to Africa are only now being developed. Development and spread of coarse grain varieties that could raise yields substantially above trend growth are not imminent.

Thus, there is no reason to expect actual yields in the third world to differ significantly from the long-term trend for yield increases there. Nor does there appear to be any reason to expect a major shift in the relatively slow upward trend of harvested area. As a result, grain production in the third world by 1995 may reach 590 million tons, from 450 in 1985/86. [Gary Vocke (202) 786-1705]

Export Growth Markets for U.S. Grains and Oilseeds

Throughout the 1970's, U.S. agricultural exports rose until, in 1980, 39 percent of U.S. cropland harvested was used for export. By 1986, the value of U.S. exports had declined 35 percent and only 29 percent of U.S. cropland was used for export, the lowest since 1971. Exports are showing signs of growing again this year. A growing export market is important in the recovery of U.S. agriculture from its recent financial problems.

Because grains and oilseeds are such a large component of U.S. exports, we will focus on these commodities. Most of the import growth for grains and oilseeds in the next decade or more will likely come from a few, mostly middle-income countries in intermediate stages of economic development. As world grain and oilseed imports grow, U.S. farmers will want to maintain or increase their trade share.

The Decline in U.S. Exports May Be Bottoming Out

The volume of U.S. exports of grains and oilseeds is increasing during calendar 1987 to 128.6 million wheat-equivalent tons from the recent low of 110.6 million in 1986. (Wheat equivalent units are used to overcome the aggregation problems associated with index numbers which are plagued by changing exchange and inflation rates). This upturn follows a 6-year decline (1980-86). Before that, the longest and largest decline lasted 3 years (1966-69).

At the bottom of the previous downturn (1966-69) grain and oilseed exports were 31 percent below trend. They recovered 4 years later. In the recent downturn (1981-86) they were 32 percent below trend. Preliminary data show U.S. grain and oilseed exports growing over 16 percent in 1987. It is too soon to say if or when exports will return to their long-term trend, but the recent decline appears to have bottomed out.

U.S. Exports Depend on Global Trade Volume and U.S. Share

Export fluctuations can be described by looking at two sources of growth: (1) growth in world imports, and (2) changes in the U.S. share of world exports. From the late 1960's through the late 1970's, world imports of grains and oilseeds grew at an average annual rate of over 8 percent. The U.S. share of world exports of grains and oilseeds increased from 59 to 71 percent; U.S. exports grew at a high rate. In contrast, in the early 1980's world imports increased at a slow annual rate of less than 1 percent, and the U.S. share of world exports declined from 72 to 61 percent; U.S. exports fell rapidly.

Increases in U.S. Share Depend on Productivity, Prices, and Policy

Market share is an indicator of competitiveness. From 1961 to 1985 the U.S. share of world exports of grains and oilseeds averaged 63 percent, ranging from 53 in 1961 to 72 in 1978. One reason for long-term U.S. export success is the ability of U.S. farmers to increase resource productivity. For the past 3 decades, the productivity of U.S. agricul-

Economic Development and Agricultural Trade

Successive stages of economic growth and development help determine developing nations' needs for agricultural imports. In the low-income stage, the staples of consumption are largely basic foodstuffs produced domestically. Some food grains may be imported on concessionary terms. Agricultural products such as coffee and sugar may be exported in order to import foodstuffs. Low per capita income constrains demand, and low technology constrains production. Relatively little foodstuff trade takes place.

In the middle-income stage, economic growth drives import growth. Higher per capita income combines with a changing diet to generate a demand for food which outstrips increases in food production. The diet composition shifts from basic staples to more high quality food grains and livestock products. Although agriculture becomes more productive, a part of the growth in demand is met by increased imports.

There is a subsequent high-income stage when food consumption patterns mature. While per capita income and consumption are high, consumers no longer use a large share of their increased income to buy more food.

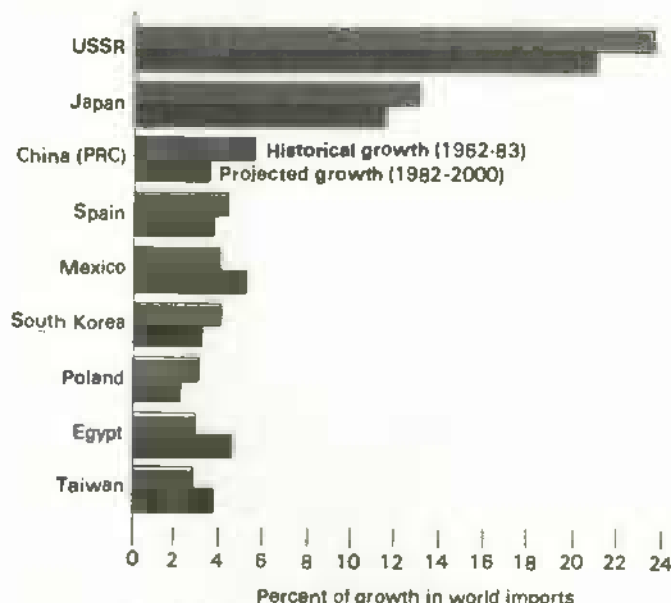
In these higher-income countries, the tendency to generate sustained increases in agricultural production through technical change continues to raise agricultural productivity. When demand is high, the rate of growth in demand slows. Growth in production continues, so growth in imports levels off or declines. Supportive or protective agricultural policies are likely to be adopted. These countries may become exporters of foodstuffs in a final stage, when agricultural production continues to rise faster than domestic use, even as they import noncompetitive farm products to meet the diversified demands of their high-income populations.

ture increased at an average annual rate of 1.9 percent. Increases in resource productivity reduce the cost of U.S. farm products. Other factors affecting trade share include price competition, and policies affecting quotas, tariffs, and subsidies by various exporters and importers.

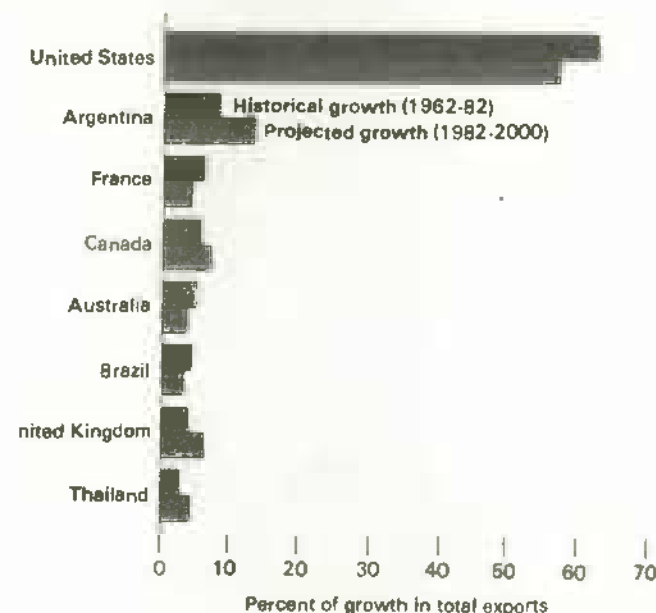
The ability of U.S. agriculture to respond to rapid increases in world demand has also contributed to U.S. competitiveness. The United States gained over 75 percent of the over 100-percent increase in world grain and oilseed trade during just the 1970's. U.S. farmers increased production rapidly by bringing in land that had been idled during the 1960's land diversion programs, by farming their land more intensively, and by using existing labor and capital more fully. Farmers also invested during the 1970's to increase capacity, in anticipation of continued growth in world demand through the 1980's.

The 1985 Farm Act can help U.S. agriculture increase its share of world trade by reducing domestic loan rates, which in turn reduce export prices. Intermediate export credit and export promotion programs are also available. The export enhancement program uses CCC stocks to counter subsidized exports of other countries.

A Few Countries Account for Most Growth in World Imports of Grains and Oilseeds



The United States Accounts for Most Growth in Grain and Oilseed Exports



U.S. Share of World Exports Decreased During the 1980's

Why did U.S. export volume decline 35 percent between 1980 and 1986? World imports declined during this period, but more importantly, the U.S. share declined about 15 percent, partly due to the high-valued dollar and to domestic price supports which left U.S. agricultural products less competitive. This gave other exporters the opportunity to expand production and exports.

Relatively high U.S. loan rates limited the ability of U.S. agriculture to adjust to market conditions during the early 1980's. This was unlike the 1970's, when rapidly expanding world demand for agricultural commodities put international prices well above U.S. loan rates. The high and rigid loan rates in the 1981 Farm Act, the rising dollar, and slowed foreign economic growth created problems for U.S. farmers as world demand growth slowed in the 1980's. World prices fell below domestic loan rates, reducing U.S. exports and increasing Government stocks.

Export subsidies also affect trade shares. The United States and other major agricultural exporters pursued policies during the early 1980's that led to very large global commodity stocks. The United States now holds over one-half of global wheat and coarse grain stocks. The United States and the EC are now using export subsidies to reduce their surpluses. When U.S. subsidies were low relative to those of the EC, U.S. products were less competitive. Subsidies can increase exports in the short term. In the long term, however, the cost of subsidies, especially if they result in a "subsidized trade war," could become very high.

A Few Countries Compete for Grain and Oilseed Exports

From the early 1960's to the early 1980's the United States obtained almost 70 percent of the growth in world grain and oilseed imports. Exports from the United States and seven other countries accounted for over 95 percent of the growth in world imports of grains and oilseeds during these two decades.

When the long-term historical trade pattern is extended to the year 2000, the same countries account for 95 percent of projected world trade growth. If the trend since the early 1960's continues, the U.S. share of growth would decline slightly from 62 to 57 percent, but the United States would still capture most of the growth. Four countries, Argentina, Canada, Thailand, and the United Kingdom, show small increases in their projected share of grain and oilseed exports. Three countries, France, Australia, and Brazil, show small decreases.

The major grain and oilseed exporting countries have highly productive, science-based agricultures, and can successfully compete in world agricultural markets. The challenge to the United States is to retain its market share.

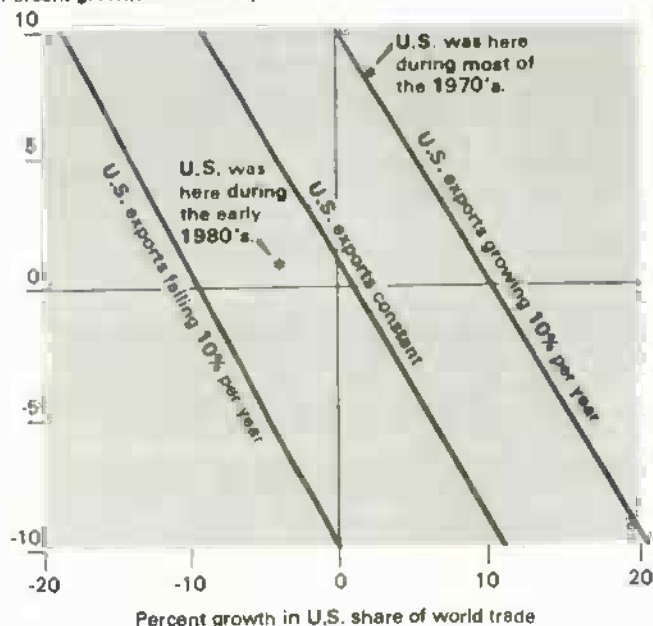
A Few Countries Account for Most Import Growth

World imports of grains and oilseeds increased more than threefold between 1961 and 1983. Eighty-six percent of this growth was in 25 countries. Five countries accounted for 50 percent. When the long-term trade pattern is extended to the year 2000, growth in imports continues to be concentrated in a few countries. The same 25 countries that accounted for 86 percent of the 1961-83 growth in imports account for 85 percent of projected growth.

In one group of these mainly middle-income countries the future contribution to growth in world imports is expected to be greater than in the past; in the other group, including Japan, China, and the USSR, the projected contribution to growth is expected to decrease. China, however, has recently shown signs of import growth.

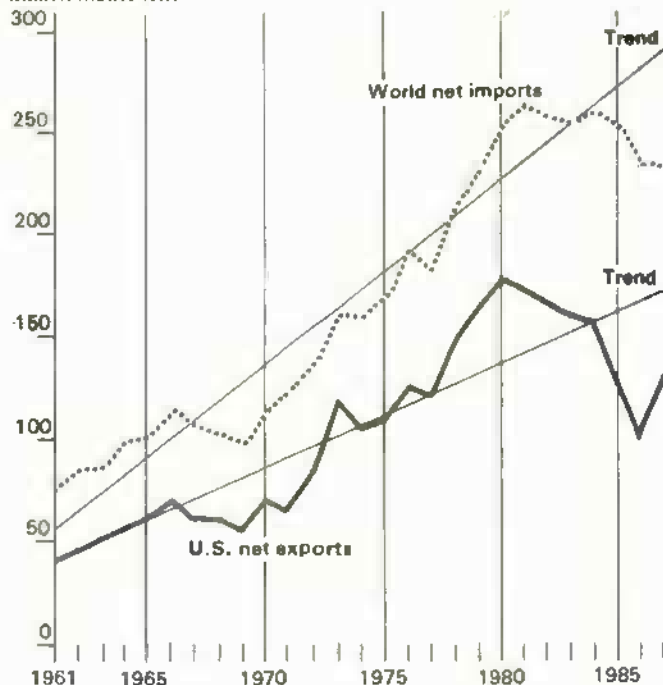
U. S. Exports Increase From Both Large Market Share And World Income Growth

Percent growth in world imports



U.S. Exports Generally Mirror World Import Patterns

Million metric tons*



*Total grain and oilseeds were measured in wheat equivalents to overcome aggregation problems associated with changes in exchange and inflation rates, and the absence of consumer price data in many countries.

Assuming income grows as projected, the countries that are expected to increase import growth to the year 2000 are Mexico, Egypt, Taiwan, Iran, Nigeria, Saudi Arabia, Venezuela, Algeria, Iraq, Romania, Morocco, Malaysia, and possibly India. Their imports are expected to grow more rapidly in the future for two reasons. Consumers use a large share of their rapidly increasing incomes to buy more food, and the underdeveloped agricultural sectors of these countries cannot meet the rapidly growing domestic demand for food. This group's share of world import growth increased from 23 percent of imports in the historical period to 38 in the projection period.

The countries expected to contribute less to growth in imports in the future than they did in the past are the USSR, Japan, China, Spain, South Korea, Poland, Portugal, West Germany, Italy, Netherlands, East Germany, Belgium-Luxembourg, and possibly South Korea and China. The share of world import growth of this group dropped from 63 percent of imports in the historical period to 49 percent in the projection period.

Trade, Debt, and Economic Growth Shape Long-Term Import Picture

Three factors greatly influenced imports of grains and oilseeds during the 1970's and 1980's: real income growth, international debt of developing countries and some centrally planned economies, and the trade policies of the centrally planned countries. Changes in these factors stimulated growth in agricultural imports during the 1970's and depressed them during the 1980's.

The rapidly rising incomes of the industrial and developing countries during the 1970's increased demand for agricultural imports. The USSR and Eastern European countries increased their food supplies, especially animal products, to improve diets. This goal required large imports of coarse grains to feed livestock. When crop production was low due to bad weather during the food crisis of the 1970's, the policy was to increase food imports rather than tighten consumers' belts. China used trade, including agricultural imports, to further its development.

Then the world recession of 1980-82, and the associated debt crisis of the developing countries, changed the international market for agricultural products. The increase in oil prices in 1979-80 contributed to a severe worldwide recession. Industrial countries' demand for developing-country products dropped and commodity prices declined.

The developing countries found their balance of payments deteriorating, which reduced their capacity to service and repay debts. Much of the developing-country borrowing was short-term, variable-rate loans, so their difficulties were compounded when interest rates rose. This debt crisis forced many developing countries to limit imports and raise exports to obtain the additional foreign exchange needed for debt servicing. These actions reduced agricultural imports and created more competition for the remaining markets.

The extension of historical trade patterns to the year 2000 retains the USSR and Japan at the top of the list of importers of grains and oilseeds. These countries will continue to be large importers, but they are not projected to grow as rapidly as during 1961-83. The high-income coun-

tries of Western Europe will continue to be potentially important export markets for the United States, but their contribution to growth in world imports will continue to decline due to the maturing of their economies and increased domestic production.

The countries with increasing contributions to import growth tend to be middle-income countries with strong economic growth, countries whose growth is likely to stimulate consumption more than production. Capturing a significant share of these countries' growing agricultural imports may require that the United States help them resolve their economic development problems.

One of the developing-country growth constraints is access to international markets. With development, countries become more dependent on international trade. The growing import demands of developing countries, and the increasing burden of debt service, leave many developing countries with limited foreign exchange. Another constraint is that many developing countries cannot produce the investment goods needed to sustain economic growth, and must rely on imported investment goods.

How long-term economic and trade growth problems of developing countries are resolved will tell if these countries become growth markets. If low and middle income countries accelerate their economic growth, solve their debt problems, adjust their broader farm and nonfarm policies, and move into a stage of development associated with rapidly rising per capita food use, world agricultural trade will begin to grow quickly again. When it does, U.S. farmers will want to be competitive in world markets to maintain or increase their trade share. [Lon Cesa! (202) 786-1705. Also contributing to this article were: Matthew Shane, Thomas Vollrath, Mervin Yetley, and Gary Voche.]

World Wheat Customers: Who Will They Be?

Wheat and rice are the major food grains of the world and comprise about 10 percent of today's international agricultural trade. The percentage of world wheat production that is traded on the international market is much higher than that of rice. The U.S. share of global wheat exports in 1986 was approximately 30 percent.

People in virtually every country in the world consume substantial amounts of wheat, and a few developed countries also use wheat for animal feed. The recent development of high-yielding but lower protein wheat varieties, which are price-competitive with coarse grains, has increased use of wheat as feed in several countries in the last few years.

Total world wheat utilization, including food, feed, and industrial uses, has risen from 235 million metric tons in 1960 to an estimated 517 million this year. The average gain per year has been about 11 million metric tons. If that rate prevails until 2000, world wheat utilization will rise to about 660 million metric tons. Much of this increase is occurring in low-income countries where adequate diets have not yet been reached, and where grains, rather than meat, are the principal food.

Wheat is primarily used as a food grain. World wheat food consumption represents about 70 percent of total utilization, down from over three-fourths in the early 1960's. Prospects for growth in world wheat food consumption, especially in less developed countries, may hold the key to future U.S. wheat exports. Wheat food consumption rose to 326 million tons in 1982, the latest year for which data are available. The average increase in food use since 1961 has been about 7 million metric tons per year.

In discussing future world wheat food consumption, it is useful to distinguish among five groups of countries. The groups are based upon average calorie intake and whether the major food consumed is meat, wheat/rice, or other food commodities such as coarse grains, roots, tubers, and plantains.

Wheat Consumption Declining in Group 1 Countries

Countries with meat and meat products as their staple food and adequate calorie intake are basically the industrialized countries of North America, Northern Europe, and Oceania, plus Argentina. These Group 1 countries consumed an average of 119 kilograms of wheat per capita annually during 1978-1980.

However, per capita wheat consumption within Group 1 declined by 0.1 percent annually from 1966 to 1980, while consumption of meat rose. Eight countries (Argentina, Belgium-Luxembourg, Denmark, Finland, Ireland, the Netherlands, New Zealand, and Switzerland) decreased their per capita wheat consumption annually from 1966 to 1980. Only two countries (Australia and New Zealand) decreased their annual meat consumption over the period.

In contrast to their declining wheat consumption, these countries raised per capita wheat production 2.7 percent annually from 1961 to 1982. Wheat production grew faster

(or declined less rapidly) than wheat consumption in every country within the group. Production of meat and meat products also climbed faster than consumption—1.8 percent versus 1.3 percent annually.

Consumption Gaining in Group 2 Countries

Group 2 countries are those with adequate calorie intake and wheat or rice as the staple food. These nations consumed only slightly more wheat than Group 1—129 kilograms per capita per year from 1978 to 1980—but per capita consumption from 1966 to 1980 grew at a rate of 1.2 percent annually for wheat and 3.3 percent for meat. Both these average values are considerably larger than for Group 1.

Despite increasing consumption, per capita wheat production for Group 2 countries declined by 0.9 percent annually from 1961 to 1982. Indeed, on a per capita basis, wheat consumption increased faster (or declined less) than production in all but six of these countries—Yugoslavia, Turkey, Spain, Saudi Arabia, Norway, and Greece.

Group 2 can be subdivided into three strata by rate of growth in per capita wheat consumption: greater than 1

Country Groups According to Caloric Intake per Capita and Staple Food

| I | II | III | IV | V |
|--------------------|-------------|----------------|--------------|------------------|
| Argentina | Algeria | Bangladesh | Costa Rica | Benin |
| Australia | Chile | Bolivia | Mexico | Brunei |
| Austria | Colombia | Brazil | Paraguay | Burundi |
| Belgium-Luxembourg | Egypt | Burma | South Africa | Cameroon |
| Canada | Greece | Dominican Rep. | | Chad |
| Denmark | Hong Kong | Gambia | | Ecuador |
| Finland | Iceland | Guyana | | El Salvador |
| France | Iran | India | | Ethiopia |
| Germany, Fed. Rep. | Iraq | Indonesia | | Ghana |
| Ireland | Israel | Liberia | | Guatemala |
| Netherlands | Italy | Madagascar | | Guinea |
| New Zealand | Ivory Coast | Nepal | | Haiti |
| Sweden | Jamaica | Pakistan | | Honduras |
| Switzerland | Japan | Panama | | Kenya |
| U.K. | Jordan | Peru | | Malawi |
| U.S. | Korea, Rep. | Philippines | | Mali |
| | Libya | Sierra Leone | | Mauritania |
| | Malaysia | Sri Lanka | | Mozambique |
| | Mauritius | Thailand | | Nicaragua |
| | | Uruguay | | Niger |
| | | | | Nigeria |
| | | | | Papua New Guinea |
| | | | | Rwanda |
| | | | | Senegal |
| | | | | Somalia |
| | | | | Sudan |
| | | | | Tanzania |
| | | | | Togo |
| | | | | Uganda |
| | | | | Venezuela |
| | | | | Yemen Arab Rep. |
| | | | | Zaire |
| | | | | Zambia |

Average Per Capita Income, Wheat Consumption, and Wheat Production in Five Country Groups

| Country group | GDP, 1979-81 | Consumption, 1978-80 | Production, 1982-84 | Growth rates | |
|---------------|--------------|----------------------|---------------------|----------------------|---------------------|
| | | | | Consumption, 1966-80 | Production, 1961-82 |
| | \$ 1/ | Kilograms/year | | Percent 2/ | |
| Group 1 | 6,829 | 118.6 | 334.6 | -0.1 | 2.7 |
| Group 2 | 3,239 | 129.1 | 92.8 | 1.2 | -0.9 |
| Group 3 | 761 | 48.2 | 40.0 | 3.1 | 3.2 |
| Group 4 | 2,459 | 54.0 | 56.0 | 0.6 | 4.3 |
| Group 5 | 893 | 19.2 | 3.9 | 4.8 | 1.4 |

1/ Purchasing power parity standardizes measures of income for comparison across countries. 2/ Annual compound rates.

percent, 0 to 1 percent, and negative. The Group 2 countries with wheat consumption growth rates greater than 1 had the lowest average gross domestic product per capita from 1979 to 1981 and the lowest per capita meat consumption of the three subgroups.

In the subgroup of countries with wheat consumption growth rates between 0 and 1, GDP and meat consumption growth rates were also intermediate between the other two subgroups. Finally, the subgroup with decreasing wheat consumption had the highest average GDP, and consumed the most meat and the least wheat per capita.

These results illustrate that there is a shift from wheat to meat and meat products as incomes rise. Thus, within Group 2, the wheat market appears to have potential for expansion mainly in the lowest income subgroup. The market is approaching stability in the intermediate income subgroup and declining in the highest income subgroup. The per capita production of wheat is declining in each subgroup.

Low-Income Group 3 Countries Represent Wheat Growth Market

Group 3 countries include many third world countries with inadequate diets and wheat or rice as a staple food. The average per capita GDP of Group 3 countries was about one-fourth that of Group 2 countries in 1979-1981. Meanwhile, the average per capita wheat consumption level was slightly more than one-third that in Group 2, at 48 kilograms per capita annually.

However, the average growth rate for wheat consumption in Group 3 countries was 3.1 percent annually, compared with -0.1 for Group 1 and 1.2 for Group 2.

Per capita wheat production for those Group 3 countries that produce wheat grew at 3.2 percent annually from 1961 to 1982. Within these countries, approximately half had higher per capita consumption growth than production growth. Thus, Group 3 countries hold considerable potential for increased market demand for wheat and rice. Both the physiological caloric demand and the increase allowed by economic development are not yet fulfilled.

Country Group Classification

| Staple food | Adequate diet | Inadequate diet |
|----------------------|---------------|-----------------|
| Meat & meat products | Group 1 | * |
| Wheat & rice | Group 2 | Group 3 |
| Other | Group 4 | Group 5 |

*No country studied had both inadequate diets and meat as the staple food.

The extent to which wheat may substitute for rice in these countries is unclear, since rice is itself a preferred food grain. For this reason, wheat consumption in rice-eating countries is unlikely to reach the levels noted in the wheat-eating Group 2 countries. However, urban populations seem to prefer wheat (in the form of bread) over rice, and since urbanization is proceeding very rapidly in most developing countries, wheat consumption is likely to continue gaining.

Where Corn Is Staple, Wheat Consumption Is Low

On average, people in Mexico, Costa Rica, Paraguay, and South Africa have adequate diets and eat corn as their staple food, constituting Group 4. Average wheat consumption per capita during 1978-80 was 54 kilograms per year in these corn-eating countries. Growth in per capita wheat consumption has been only 0.6 percent per year, and it will likely continue sluggish.

Although theoretically there is potential for a considerable increase in per capita wheat consumption in Group 4, this would require a shift from corn to wheat. The data do not indicate that this shift is occurring rapidly.

**Group 5 Consumes
Least Wheat Per Capita**

Countries in Group 5 have inadequate diets and use roots, tubers, coarse grains, or plantains as their staple food. Of all groups, Group 5 countries consumed the least wheat per capita during 1978-80, although consumption in these countries grew 4.8 percent annually from 1966 to 1980, considerably faster than in any other group. Since wheat consumption averaged only 15.8 kilograms per person per year in 1978-80, high per capita growth can be sustained for many years before physiological needs and economic wants are met.

Moreover, in these countries, per capita wheat production increased only 1.4 percent annually, much slower than consumption. Only seven countries in this group increased per capita wheat production faster than consumption: Chad, Malawi, Sudan, Tanzania, Uganda, Zaire, and Zambia.

Food Aid May Boost Consumption

U.S. food aid under P.L. 480 boosts wheat consumption in recipient countries. Many P.L. 480 recipients fall within Groups 3 and 5, which had the highest growth in per capita wheat consumption from 1966 to 1980. Food aid received from all donors accounted for 2.6 percent of the total cereal-equivalent consumption of grains, roots, and tubers in 69 recipient countries studied. Since the United States contributes approximately half of the total assessed grain needs of these countries, P.L. 480 shipments supported 1.3 percent of the total cereal-equivalent consumption.

Per capita food production, measured in calories, has been declining in 38 of the 69 food aid recipient countries. In those 38 countries, P.L. 480 is very likely responsible for the gains in per capita wheat consumption.

For those countries where both domestic per capita food production and wheat consumption have been increasing, the role of P.L. 480 is not as clear. Food aid shipments could be targeted to a specific group and never move through the marketplace. In this instance, the increase in consumption by the targeted group is probably entirely supported by food aid.

In countries where domestic food production and imports (both commercial and concessional) have been rising, it is again much less obvious whether P.L. 480 is directly responsible for observed increases in per capita wheat consumption.

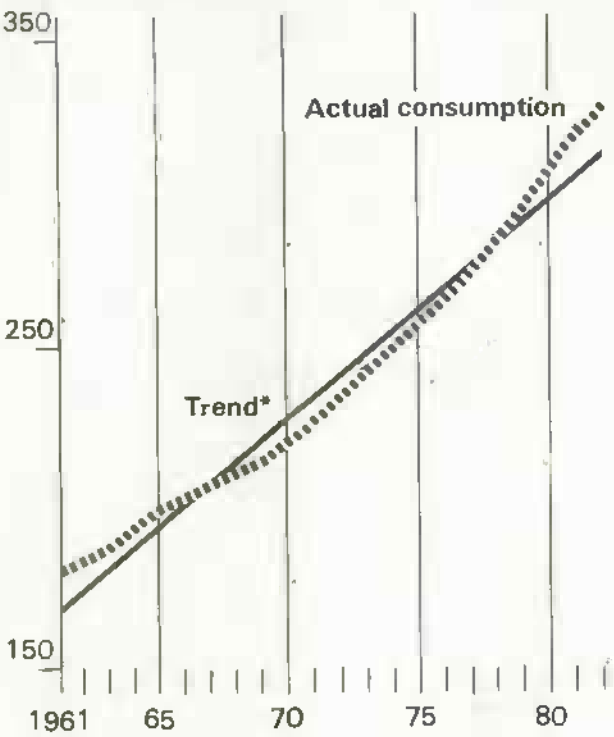
**Economic Growth Is
Key to Export Growth**

Per capita consumption of wheat from 1978 to 1980 was highest in Groups 1 and 2, but their consumption growth, in per capita percent increases compounded annually, is very slow. Therefore, opportunities for expansion of per capita wheat demand in the well-fed countries appears limited. Indeed, in Group 2 the evidence suggests that per capita wheat consumption will decline as meat is substituted for wheat, as is already occurring in Group 1. Group 4, with four corn-eating countries, also does not seem to be expanding per capita wheat consumption substantially.

Groups 3 and 5, both with inadequate average diets, had high growth in per capita wheat consumption during

**World Wheat Consumption for Food
Exceeds Trend in Eighties**

Million metric tons



*Trend consumption = $163.26 + 6.72$
(1961 = 1); $R^2 = .97$.

1966-1980 and high population growth rates (2.3 and 2.9 percent, respectively), suggesting potential for very rapid growth in wheat demand.

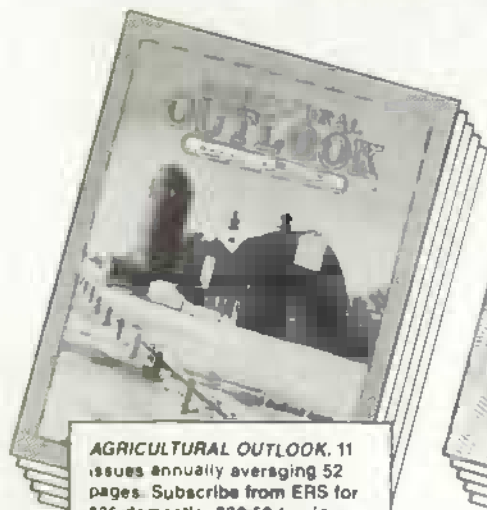
With a total population of 1.7 billion in Groups 3 and 5, per capita consumption and population growth together could boost wheat demand over 10 million tons annually. Further, growth in per capita wheat production in these countries lags behind the growth in population. Production gains are less than consumption growth in Group 5 and approximately equal to consumption growth in Group 3.

Without doubt, there exists a huge potential market in Groups 3 and 5. But that potential cannot be translated into commercial demand for wheat unless these countries' economies grow. For those Group 3 and 5 countries generating additional income, a very large share—approximately 80 percent—will be spent on food. The food grains, especially wheat, will capture the bulk of the increased food expenditures.

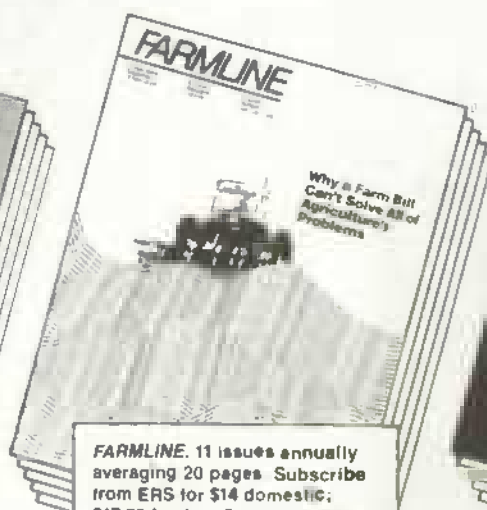
But not all countries in Groups 3 and 5 have experienced economic growth. In fact, several countries' economies have contracted since the oil crises of the 1970's. Also, these low- and no-growth countries typically have substantial international debt. The lack of economic growth and high debt means most of these countries must rely on concessional food aid to improve their per capita consumption. [Suzanne M. Marks and Mervin J. Yetley (202) 786-1705]

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